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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/737,339

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Yuguang Fang

5853-365

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AKERMAN SENTERFITT

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WEST PALM BEACH, FL 33402-3188

EXAMINER

HAILE, AWET A

ART UNIT

PAPER NUMBER

2616

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/737,339	<b>Applicant(s)</b> FANG ET AL.	
	<b>Examiner</b> AWET HAILE	<b>Art Unit</b> 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5 and 7-9 is/are allowed.
- 6) ☒ Claim(s) 10-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***DETAILED ACTION***

***Response to Amendment***

1. **Claims 1-5 and 7-14** are pending on this application.
2. **Claim 6** is cancelled.

***Response to Argument***

3. Applicant's arguments with respect to **claims 10-14** have been considered but are moot in view of the new ground(s) of rejection.

***Drawing***

4. The replacement drawings (FIG 1, 2 and 3) were received on 01/11/2008, which replaces FIG 1, 2 and 3 previously submitted drawings. This drawing is accepted by examiner.

***Claim Rejections – 35 USC§ 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. **Claims 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil(US 2004/0141548 A1) in view of Taylor et al(US 2003/0039317 A1).

**Regarding claim 10**, Shattil'548 discloses, a method of using polyphase code sequences whose number is the same as a half of an Inverse Fast Fourier Transforming (IFFT) size( see paragraph 58, Shattil'548 teaches a method of using half of IFFT size and N/2 conjugate mirrored samples), comprising the steps at a processor of: taking samples of an IFFT size in advance from a subsequent sample of a sample of each peak( Fig 2, transmitter 200 , generating training packets, see also paragraph 119);

generating six sample blocks (paragraph 67 and paragraph 119, creating a variable length training sequence, the variable size can be six ); Fourier-transforming each block to provide Fourier-transformed signals( Fig 2, FFT 225, transforming the received signal); taking the Fourier-transformed signals from a first output to an output signal having half of a Fast Fourier Transforming (FFT) size( Fig 2 , CI Decoder 223, see also paragraph 99, notice, if half of the IFFT size is used on the transmitting side the receiving side will have half FFT size out put).

However, Shattil'548 failed to teach, calculating the signal-to-noise ratio for each sub-carrier with six signals from six Fourier-transformed blocks for a same sub-carrier in the processor.

Taylor'317 teaches, calculating the signal-to-noise ratio for each sub-carrier with six signals from six Fourier-transformed blocks for a same sub-carrier in the processor( paragraph 25, calculating SNR for each sub carrier when the sub carrier is not carrying data, ( training packets), see also Fig 4, step 412, which shows comparing each calculated SNR with a threshold value).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate, the method of calculating SNR for each sub carrier as taught by Taylor'317 into the receiver 220 of Shattil'548, in order to maximize data throughput by leveraging the error correction capacity of forward error correction, since such a method is suggested by Taylor'317(see abstract).

8. **Claims 11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil'548 and Taylor'317 as applied to **claim 10** above, and further in view of Walton et al(US 2004/0184398 A1).

**Regarding claim 11**, Shattil'548 and Taylor'317 failed to teach, wherein the method further comprises the step of smoothing a signal-to-noise ratio distribution by convolving the signal-to-noise ratio distribution with 7 sample points of a normal distribution.

However, Walton'398 teaches, wherein the method further comprises the step of smoothing a signal-to-noise ratio distribution by convolving the signal-to-noise ratio distribution with 7 sample points of a normal distribution( see paragraph 72, teaches the effect of convolution on a variable SNR, notice, selecting 7 samples will be a design choice).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate, the method of smoothing calculated SNR as taught by Walton'398 into the modified receiver 220 of Shattil'548, in order to determine the accurate transmission channel capacity , since such a method is suggested by Walton'398( paragraph 70).

**Regarding claim 12**, Shattil'548 and Taylor'317 failed to teach, wherein the method further comprises the step of bit allocating by selecting a modulation type for each sub-carrier according to the signal-to-noise ratio distribution.

However, Walton'398 teaches, wherein the method further comprises the step of bit allocating by selecting a modulation type for each sub-carrier according to the signal-to-noise ratio distribution (paragraph 7, bit loading the transmission channel according to its SNR).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate, the method bit allocating according to the sub carriers signal to noise ratio as taught Walton'398 into the transmitter 200 of Shattil'548, in order to maximize throughput on the multiple transmission channel while meeting certain quality objectives, since such a method is suggested by Walton'398(paragraph 6).

9. **Claims 13 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil'548 and Taylor'317 as applied to **claim 10** above, and further in view of Dollard(US 6934340 B1).

**Regarding claim 13**, Shattil'548 and Taylor'317 failed to teach, wherein the method further comprises the step of generating a bitmap and storing the bitmap (column 3, lines 17-20, generating bitmap packet).

However, Dollard'340 teaches, wherein the method further comprises the step of generating a bitmap and storing the bitmap (column 3, lines 17-20, generating bitmap packet performing FFT).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate, the method of generating bitmap as taught by Dollard'340 into the receiver 220 of Shattil'548, for adaptively modifying the modulation of digital data to

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limit the effects of interference, since such method is suggested by Dollard'340(column 3, lines 8-10).

**Regarding claim 14**, Shattil'548 and Taylor'317 failed to teach, wherein the method further comprises the step of transmitting the bitmap.

However, Dollard'340 teaches, wherein the method further comprises the step of transmitting the bitmap (Fig 3, step 56, transmitting the generated bitmap to transmitter).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate, the method of transmitting bitmap to the receiver as taught by Dollard'340 into the receiver 220 of Shattil'548, for adaptively modifying the modulation of digital data to limit the effects of interference, since such method is suggested by Dollard'340(column 3, lines 8-10).

### ***Allowable Subject Matter***

10. **Claims 1-5 and 7-9** are allowed.

The following is reason for allowance:

**Regarding claims 1 and 9**, the prior arts fail to teach alone or in combination “a threshold for deciding whether a peak is found is a number which is a magnitude of a first peak times a constant that is a number between 0.7 and 1.0.” as recited in claims 1 and 8.



11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Linnartz et al (US 2002/0181549 A1), Troulis (US 7218693 B2), Sandell et al (US 2004/0131011 A1), Wu et al (US 2002/0172146 A1), Xu (US 2004/0047368 A1), Yeh et al (US 2005/0259568 A1), Giannakis et al (US 2002/0181389), Tandai et al (US 2003/0171128 A1), Sano et al (US 6246735 B1), Mazoguchi et al (US 6658063 B1) and Wu et al (US 2008/0002568 A1) preamble generation.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AWET HAILE whose telephone number is (571)270-3114. The examiner can normally be reached on Monday through Friday 8:30 AM - 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MOE AUNG can be reached on (571)272-3474. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung S. Moe/  
Supervisory Patent Examiner, Art Unit  
2616

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